

## 22 Temperature sensor (TEMP)

### 22.1 Functional description

The temperature sensor measures the silicon die temperature.

The TEMP is started by triggering the START task. When the temperature measurement is completed, a DATARDY event will be generated and the result of the measurement can be read from the TEMP register

In order to be accurate, the measurement has to be performed while the HFCLK crystal oscillator is selected as clock source, see [CLOCK](#) for more information.

When the temperature measurement is completed, the TEMP analog electronics power down to save power.

The TEMP only supports one-shot operation, meaning that every TEMP measurement has to be explicitly started using the START task.

### 22.2 Register Overview

Table 181: Instances

Base address	Peripheral	Instance	Description
0x4000C000	TEMP	TEMP	Temperature Sensor

Table 182: Register Overview

Register	Offset	Description
Tasks		
<a href="#">START</a>	0x000	Start temperature measurement
<a href="#">STOP</a>	0x004	Stop temperature measurement
Events		
<a href="#">DATARDY</a>	0x100	Temperature measurement complete, data ready
Registers		
<a href="#">INTEN</a>	0x300	Enable or disable interrupt
<a href="#">INTENSET</a>	0x304	Enable interrupt
<a href="#">INTENCLR</a>	0x308	Disable interrupt
<a href="#">TEMP</a>	0x508	Temperature in °C

### 22.3 Register Details

Table 183: INTEN

Bit number				31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
Id																																			A
Reset				0																															0
Id	RW	Field	Value	Id	Value										Description																				
A	RW	DATARDY													Enable or disable interrupt on <i>DATARDY</i> event																				
			Disabled		0										Disable																				
			Enabled		1										Enable																				

Table 184: INTENSET

Note: Write '0' has no effect. When read this register will return the value of [INTEN](#).

Note: Write '0' has no effect. When read this register will return the value of <a href="#">DATARDY</a> .										31 30 29 28 27 26 25 24 23 22 21 20 19 18 17 16 15 14 13 12 11 10 9 8 7 6 5 4 3 2 1 0																			
Id												A																	
Reset		0 0 0 0 0 0 0 0 0 0										0 0																	
Id	RW	Field	Value Id		Value					Description																			
A	RW	DATARDY	Enabled		1					Write '1' to Enable interrupt on <a href="#">DATARDY</a> event. Enable																			

**Table 185: INTENCLR**

**Note:** Write '0' has no effect. When read this register will return the value of [INTEN](#).

Bit number				31 30 29 28 27 26 25 24 23 22 21 20 19 18 17 16 15 14 13 12 11 10 9 8 7 6 5 4 3 2 1 0																															
Id				A																															
Reset				0 0																															
Id	RW	Field	Value Id	Value								Description																							
A	RW	DATARDY	Disabled	1								Write '1' to Clear interrupt on <i>DATARDY</i> event. Disable																							

**Table 186: TEMP**

Bit number				31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0			
Id				A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A			
Reset				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
Id	RW	Field	Value	Id	Value	Description																																
A	R	TEMP				Temperature in °C																																
						Result of temperature measurement. Die temperature in °C, 2's complement format, 0.25 °C																																
						Decision point: DATARDY																																